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MONTHLY REPORT

[redacted]

25X1

PAR 202

31 Mar 65

SUBJECT: Briefing Print Enlarger

TASK/PROBLEM

1. To design and build a prototype enlarger for exposing high-quality briefing prints in formats up to and including 20 x 24 inches in size. Magnification to be in the 10 - 60 diameter range. The enlarger will be able to produce both black-and-white and color prints. Changing from one capability to the other should be made with a minimum of effort.

DISCUSSION

2. Effort has been to continue design and fabrication of a breadboard system which will provide engineering data for this project and also for PAR 224. The accomplishments have been:

a. Vacuum Platen and Carriage: The translucent platen face has been assembled upon the machined platen casting and tested with the vacuum fan purchased for the breadboard tests. The vacuum hold-down device functions well with only moderate blower noise level and essentially no noise from the air flow at the platen. The major noise source is the blower exhaust. An acoustic enclosure for the fan, including exhaust muffling, is to be tested in the breadboard system.

b. Main Frame: The lower frame and optical frame units were ordered from local subcontractors with delivery promised in April.

c. Lamphouse and Gate Assembly: The detail sketches of this assembly for the breadboard system are about 75 percent complete.

d. Objective Focus Assemblies: Design effort is approximately 90 percent complete and detail sketches are about 50 percent complete.

e. Objective Lenses: The mount designs are completed and were released for fabrication early in the month.

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f. Negative Transport Model: Detail sketches of the "non-steering" roller model are nearly ready for release.

g. Enlarger Control System: The circuit design is completed. Some long delivery components were ordered.

PLANNED ACTIVITY

3. In the next month, we plan to:

a. Begin assembly of components on the optical frame.

b. Release all detail drawings of the lamphouse and of the Objective Focus Assemblies for fabrication.

c. Begin assembly and wiring of subassemblies in the electrical control system.

Field Coverage, RPE Breadboard

			Field Coverage		
			Negative		Print
Lens	OAC	M	Dia.	Square	Diagonal
10.75"	57.0"	2.95X	3.9"	2.76"	11.6"
	65.	3.77		(70.0mm)	14.7
	80.	5.2[illegible]			20.4"
7.17	50.0	[illegible].75	[illegible]	2.[illegible]2"	18.
	62.	6.40		(59. mm)	24.6
	80.	[illegible].0[illegible]			34.3
4.85	50.0	8.[illegible]6	[illegible]	2.72"	32.3
	62.	10.97		(69. mm)	41.[illegible]
	80.	14.70			55.6
3.06	50.0	11.55	2.15	1.52"	31.2
	62.	15.47		(38.6mm)	39.7
	80.	24.36			52.3
1.93	50.0	24.10	1.29	0.91"	31.2
	62.	30.32		(23.1mm)	39.26
	80.	39.64			51.3
1.26	50.0	37.73	0.82	0.58"	31.2
	62.	47.23		(14.7mm)	39.1
	80.	61.48			50.8

Diagonal Length for Various Standard Sheet Sizes

Sheet	Diag.	Sheet	Diag.
8" x 10"	12.8"	16" x 20"	25.6"
10" x 12"	15.6"	20" x 24"	31.2"
11" x 14"	17.7"	30" x 40"	50.0"
14" x 17"	22.0"	40" x 40"	56.5"

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BPE B & W Lomsen (W98 Filter - Blue)

EF (In.)	f/No.	Magnification OAC (In.)	Magnification M (Diam.)	Diffraction Lin. No3. (l/mm)	Diffraction Lin. Print (l/mm)	Observed Resolution Chart	Observed Resolution Neg. (l/mm)	Observed Resolution Print (l/mm)
10.75(1)	f/17.8	57.5 65. 80.	2.95 3.77 5.24	93 98 105	31.5 26. 20.	6/2	89	30. 23. 17.
7.17(1)	f/12.	50. 62. 80.	4.75 6.48 9.04	153 160 167	32. 25. 18.5	6/5	127	26. 19. 14.
4.85(1)	f/7.8	50. 62. 80.	8.46 10.97 14.73	254 260 266	30. 23.6 18.	7/4	226	26. 20. 15.
3.06(1)	f/5.	50. 62. 80.	14.53 18.87 24.36	445 422 407	28.5 23. 17.	8/2	360	25. 19. 14.
1.93(2)	f/4.2	50. 62. 80.	24.10 30.52 39.64	505 530 543	21. 16.8 13.	8/4	452	18. 15. 11.4
1.27(2)	f/2.8	50. 62. 80.	37.73 47.23 60.50	782 762 782	21. 16.6 13	9/1	640	17. 13.5 10.4

(1) Aperture Stop Diameter 0.6"

(2) Aperture Stop Diameter 0.45"

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lines/mm

80 - 800 Resolution Charts

	6	7	8	9
1.	80	160	320	640
2.	90	180	360	718
3.	101	202	403	806
4.	113	226	452	
5.	127	254	508	
6.	142	285	570	

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RELATIONSHIP OF MAGNIFICATION, FOCAL LENGTH, *and* NEGATIVE TO PLATEN DISTANCE